

Hobbies

WEEKLY

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A PRACTICAL DOG KENNEL

MANY people keep their dogs indoors nowadays, but even for these dog lovers, however, there may be times—such as when he is changing his coat—when his presence in the house causes trouble.

For such times, and for those who prefer to keep their doggy pals outside, this kennel has been specially designed. Often, indeed, is a dog said to be man's best friend, and in return for canine affection and companionship, a snug, clean home—as well as good food—is an obligation.

With Hinged Roof

From the picture of the completed kennel, it will be seen that the overhanging roof protects the entrance and that the extension of the floor in front will help in preventing your dog padding water inside, as well as providing a place where he may sit or eat.

For easy cleaning, the roof of the kennel is hinged, as illustrated in the sectional drawing, so that it may be lifted forwards. Stooping to clear out old bedding through the entrance used by the dog is troublesome to say the least, and is thus made unnecessary.

Framework

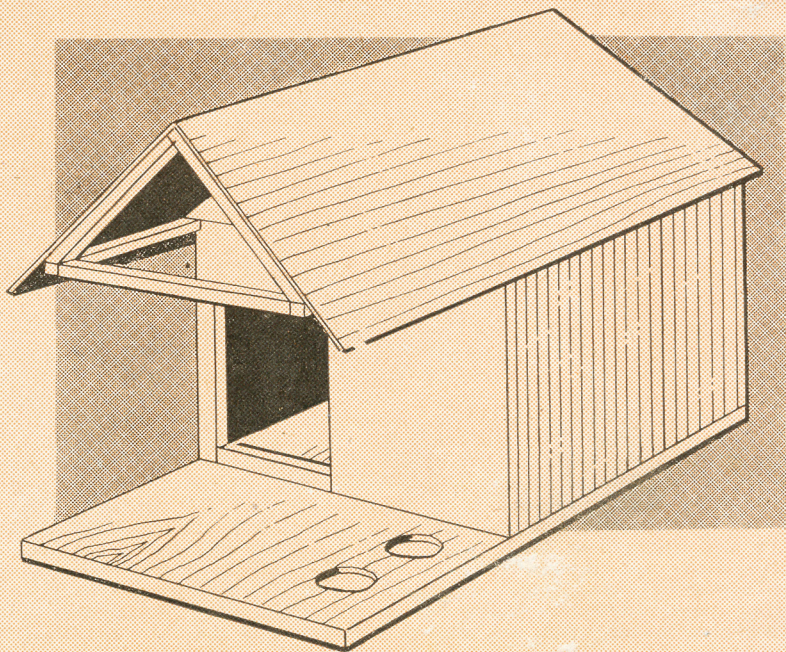
The framework illustrated is designed for minimum expense and trouble. Measurements are given for 1in. square wood. Thicker wood may equally well be used and will make a stronger job, but will be more expensive. 1in. square wood is recommended as being the minimum size easily worked. You will probably have to buy this and will have

to pay according to size. One useful point to remember when buying is that it will often be cut to the lengths you require without extra charge.

Suitable jointing may be used if you wish, but as all joints are out of sight inside, and as the covering fastened upon the framework will give rigidity, no special joints need be attempted. The wood lengths may simply be nailed together.

The floor should be constructed first. Having made the framework, planks should be nailed upon it before starting to make the kennel body. The framework is sufficient to keep the kennel off the stones of a yard, but bricks or legs should be provided for additional support if the kennel is to be placed upon grass or bare soil.

Tongued and grooved boards are best for the floor. But should planks be the



only thing available, it is a good idea either to fill in the cracks with tar, putty or plastic wood, or to tack roofing on to the underside. Draughts coming up through the floor can make a dog very sick.

Before going on to the kennel body, you may care to make provision for

MATERIAL NEEDED

All wood lin. square.	
Base Frame.	2 of 4 ft.
	3 of 1 ft., 10 ins.
Kennel Body.	2 of 3 ft.
	3 of 1 ft., 10 ins.
	and odd pieces to complete entrance frame.
Roof.	3 of 5 ft.
	3 of 1 ft., 10 ins.
	6 of 1 ft., 6 ins. (which must be shortened and have one end cut diagonally, as illustrated).
Summary; Lengths.	5 ft. ... 3.
	4 ft. ... 2.
	3 ft. ... 2.
	1 ft. 10 ins. 9.
	1 ft. 6 ins. 6 and odd pieces.

your dog's water and food bowls on the floor extension. This may be done either by cutting holes to fit them or by nailing on wood strips.

Whichever method you use, you will find it an advantage not to have your dog pushing them away as he licks at a tit-bit stuck on the side of his bowl.

The framework of the kennel body may now be put together on the completed floor. The wooden bar at the foot of the kennel entrance is to prevent rainwater from being blown inside off the extension.

The Best Position

The side chosen for the kennel entrance should, if possible, be against a wall, and it is an advantage if the kennel can be placed with its back to the north and sheltered from strong winds.

The roof should be made as a separate unit, care being taken to make it fit flush upon the body of the kennel. If it is not made true and square, there will be a draught. Countersinking the hinges is an important point for this reason. Strips of roofing felt may be tacked along the top edges of the kennel framework with advantage.

Last y, sides and roof may be completed satisfactorily in several different ways, all of which have points to commend them, according to the materials you are able to obtain. For cheapness and efficiency, second-hand planks may be nailed on and then covered with roofing felt.

Tongued-and-grooved boards are, of course, excellent, though rather expensive, and may be tarred or merely given a few coats of good paint to render them quite weather-proof. Asbestos board is clean-looking and can be bought cut to size from many firms. Holes may be drilled in it and screws will hold it in place with a minimum of construction effort.

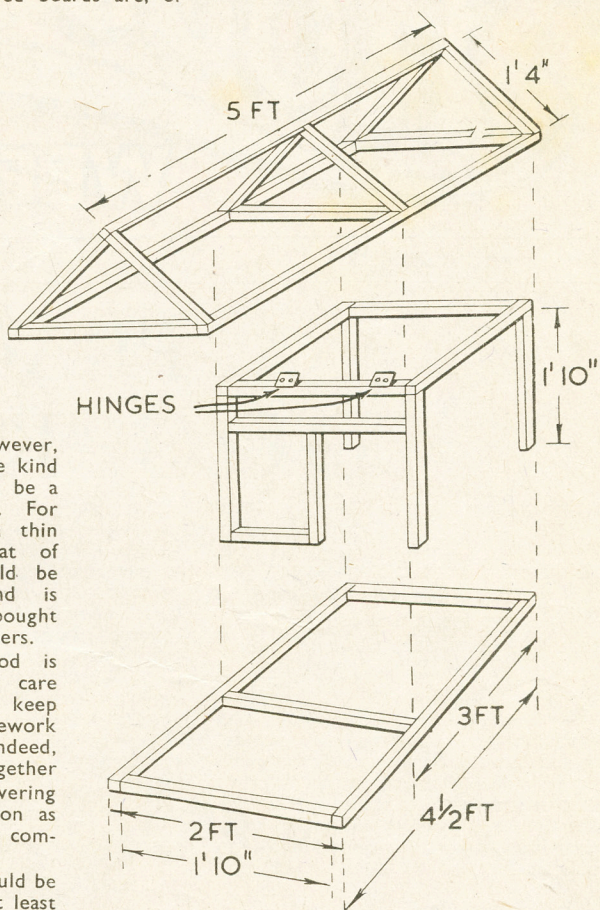
It may be painted to improve its appearance. It is, however, cold stuff, and some kind of wood lining will be a necessity for winter. For this purpose rough thin wood, such as that of orange boxes, would be quite suitable, and is sometimes easily bought from many shopkeepers.

Whichever method is decided upon, great care should be taken to keep the kennel framework square. It may, indeed, be partly fitted together and the outer covering nailed or screwed on as far as possible before completion.

The roof itself should be made to over-hang at least a few inches, on either side. When filling in the triangle of the roof back, this may be made to overlap the covering of the kennel body a $\frac{1}{2}$ in. or so, so

water will run over the joint without entering.

A summary of the lengths of wood required to construct the framework of such a kennel, 3 ft. by 2 ft. wide and high (about 3 ft. to ridge) and for a roof projecting over the front 2 ft. and for a front feeding extension of 1 ft. 6 ins. is given here.



The total of 60 ft. may seem a lot, but remember that a single plank 1 in. thick 1 ft. wide and 6 ft. long will give you more wood than you will require. (187)

From the EDITOR'S NOTEBOOK—

I HOPE readers now realize that *Hobbies Weekly* is obtainable by all who want it. Earlier in the year paper restriction prevented us printing sufficient to meet the demand. Now, however, paper is 'free' (at least so far as periodicals like this are concerned) and no newsagent need say he cannot get a copy. Our circulation is higher than it has ever been during the 50 years we have been publishing, and more and more copies have to be printed each week. If your friends do not know this fact they should be told, and any newsagent will be pleased to take an order for supplying a copy every Wednesday.

NOT all builders of buildings need worry about permits for materials or plans passed by half-a-dozen authorities. If you are a matchstick builder you please yourself what you do—and that does not often happen nowadays! You can even emulate Joseph Ward of Ninth Avenue, Limeside, Oldham, who completed a replica of the House of Commons with 18,000 matches. That, I think, must be his record, although he had previously built the Queen Elizabeth (with 7,000) and the Lancastrian. At any rate such models are always an attraction at any exhibition and probably repay the time and labour involved in their construction.

I AM always happy to congratulate readers with outstanding merit, and I am sure Master Andrew Read of Glade Road, Marlow, Bucks. comes in that category. You see, this 10 year-old enthusiast did not let a disability of having no right hand prevent him entering the Slough Arts Festival recently. Here he won a first class certificate with his entry of our Design 2784 of a Travelling Circus Lion's Cage—quite a good achievement. Which just shows that difficulties can be overcome if you have the right spirit. Congratulations, Andrew and may you gain many more awards.

The Editor

Set yourself a time for a smoke with this NOVEL CIGARETTE BOX

THE useful little cigarette box shown here is certain to arouse interest and admiration wherever it is shown. Because, in addition to the sense of good hospitality that a tasteful cigarette box always gives, there's a catch to it! It is made in the shape of a modern time-piece, but the lid can only be opened when the clock hands stand at one particular time. Unless that position is known—no cigarette!

Making the box provides an interesting piece of wood and metal work, but requires only oddments such as are often left over from larger work. The compartment to hold the cigarettes has been kept small because nowadays, with the price of cigarettes higher than it used to be, many smokers prefer to obtain their supplies fresh, in small quantities, and seldom wish to keep a large number in stock, even if they can get them!

Materials Required

The measurements given allow of wood $\frac{1}{4}$ in. thick being used, but this can, of course, be varied as required. For the clock spindles two fine-threaded bolts are required, one about $2\frac{1}{2}$ ins. long and $\frac{1}{8}$ in. in diameter and the other a piece of a $\frac{3}{8}$ in. bolt about $1\frac{3}{8}$ ins. long.

It is best, however, to procure bolts longer than this, and leave the actual

cutting down until last, since their actual length depends upon the thickness of the nuts to be used. Four thin nuts are required to fit each bolt. The hands and lid fastener are cut from thin sheet metal, either brass, or, better still, thin iron plate which will not bend as brass sometimes will.

Make a start by cutting out the case; Fig. 2 shows the design for front and back. Dimensions for the rest of the case as given in the cutting list, and it will be readily seen from Fig. 3 how these are assembled. The inner compartment holding the cigarettes is fixed between two partitions, as shown, but do not assemble this until the work on the spindles has been done.

It will be found more convenient, too, to leave the cutting of the bottom piece of the cigarette compartment until later, since its exact width will depend on the amount of space to be taken up by the 'works'. This, naturally, varies a little according to the thickness of the nuts used on the spindles.

The Discs

Two wooden discs are required, as shown at Fig. 4. They each have a slit cut in them all the way round, into which the catch on the lid engages. The opening in the slits is to allow the catch

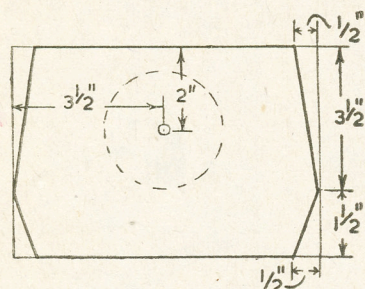


Fig. 2—Shape of front and back

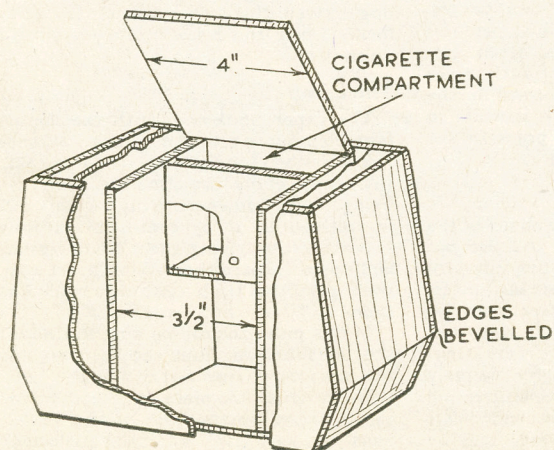


Fig. 3—Cut away view showing construction

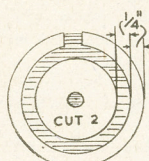


Fig. 4—Wooden discs

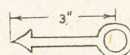


Fig. 6—The hands

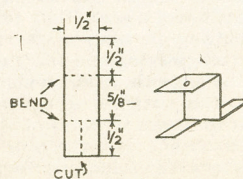


Fig. 7—The Catch

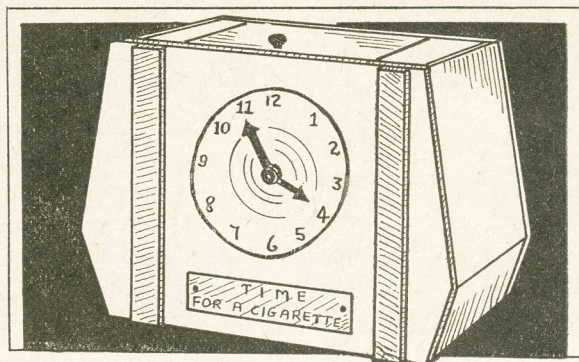


Fig. 1—The completed clock and case

to be released in one particular place only. It will be seen from Fig. 5 that one disc requires a centre hole to take the larger spindle, and one a hole for the smaller.

The Spindles

The head of the larger bolt is cut off, and then this bolt is drilled down the centre to allow the thinner bolt to fit inside it. Take care when putting the bolts in the vice to use wood on either side of them, so the thread is not damaged.

The hole down the centre of the larger bolt needs to be just big enough to allow the smaller spindle to turn inside it. So it is quite a good plan to try out the bit it is proposed to use, on an oddment of scrap wood, pushing the smaller bolt into the hole to make sure it is neither too large nor too small for it. When drilling the actual bolt, it is usually safer to drill half from one end and half from the other, to keep the hole down the middle quite parallel.

The hands are cut from strip metal with metal-cutting fretsaw, and finished off with a fine file. It will be seen from

Fig. 6 that the bases of the hands must be left big enough for them to be drilled for the spindles, one fitting on to the outer and one to the inner spindle, in the manner of real clocks.

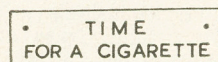


Fig. 8—The tablet

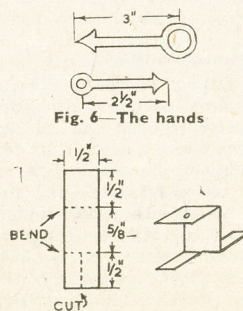


Fig. 5—Section showing mechanism

Use as strong a metal as possible for these hands, since they are turned to the 'opening' position with the finger and the appearance of the finished model is marred if the hands get bent after a little use.

Before assembling the cigarette compartment inside the case, fit on the spindles in the manner shown at Fig. 5. A hole is drilled in the front of the compartment, through which the thin bolt goes. The order for the rest is then: small nut, washer, another small nut, one disc, small nut, washer, and then the larger piece of spindle.

On this larger thread are screwed first a nut, then the second disc, another nut, then the front of the case followed by two more nuts with one hand in between them. The other hand is then held between two nuts on the end of the inner spindle.

If the pieces are assembled in this order, and screwed finger tight, tedious work inside the case is avoided and it will be readily seen just how long the

spindles need to be, before finally cutting off. Placing the whole fitting in to the case, with the front in position, will also show just the right width for the bottom piece of the cigarette com-

Cutting List		
No. of Pieces	Description	Size
2	Front and Back	7ins. by 5ins.
2	Bottom and Top (cut again for lid)	5½ins. (tapered) by 3½ins.
2	Sides, Top	3½ins. (tapered) by 3½ins.
2	Sides, Bottom	1½ins. (tapered) by 3½ins.
2	Partitions	4½ins. by 3½ins.
1	Compartment Front	3½ins. by 2½ins.
1	Compartment Bottom	3½ins. by 2ins. (approx.)
2	Discs	3ins. diameter
2	Strips for Front	5ins. by ½in.
1	Inscription Panel	3ins. by ½in.

partment, which can then be marked and cut off right first time!

Fig. 7 shows how the catch is made. It is held to the lid by the same bolt that holds on a little knob, and it engages in the slits cut out of the discs, as shown at Fig. 5.

To 'set' the clock, choose whatever time it is required to work the 'open sesame', and put the two hands to this position. Then, holding the hands still, turn the discs until the opening in the slits is just right to set free the catch.

It will be seen from Fig. 7 that the two discs will not be exactly level with each other, but one turned on slightly further, to allow both sides of the catch to be released at once. When this has been done, tighten up the nuts on either side of the discs, to hold them firmly in position.

Fig. 8 shows one simple design for an overlay of the inscription, but handymen who are good at lettering might prefer to paint this also direct on to the front of the case, which gives greater scope for decoration and ornament.

(238)

Full size patterns on page 351 for these TWO NOVEL BOOK-ENDS

THIS week we are giving our fretworkers two novelties to make up, novelties which would appeal to all if they were given as Xmas or birthday gifts. They are, too, useful gifts, and simple in construction and finish.

Book-ends are ever popular with our workers, so here are two designs of a similar nature regarding the actual book-ends, but it is the added novel decorations which make for the contrast. Looking at Fig. 1 we have clearly shown how the figure of a lamb is made to stand between the ends of two hurdles. On the second design we have represented the open end of a kennel with a well-bred terrier standing on guard.

Full Patterns

Both these designs should be effective if well cut and coloured realistically. The maker of these book-ends will be pleased to note that we have included in this issue—on page 351, full-size patterns of all those parts which need individual attention in the way of detail cutting with the fretsaw. We have shown there the patterns of the hurdles and the lamb, and the kennel end and the terrier.

On this sheet also is given a clear outline diagram with suggested sizes for the book-end which should, of course, be made from ½in. wood. Cut two pieces as (A) of oak, or some such hard wood, or, of course, one of the softer woods would answer almost as well.

The top of the piece can be cut to the shape shown or to a simple curve, or again the corners may be just rounded in a similar way to piece (B) to which the upright is screwed from beneath. Use long countersunk screws, the heads

being filled afterwards with putty or better still a mixture of glue and sawdust.

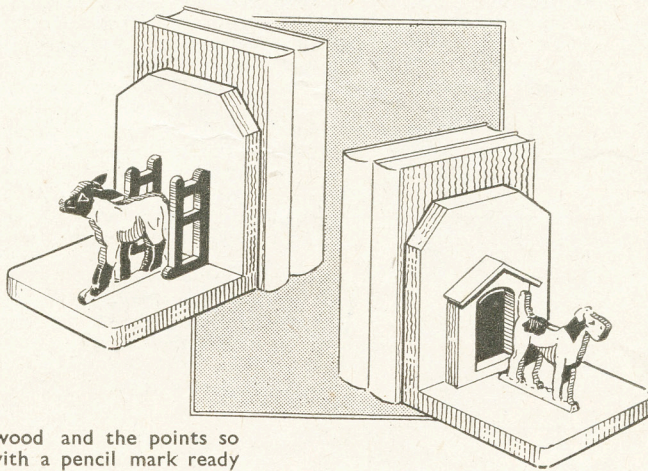
The pattern (C) for the front of the kennel can be cut from ½in. or ¾in. wood and the pattern may be either stuck down direct to the wood or the outline may be pricked into the wood and the points so made joined with a pencil mark ready for cutting out.

The piece should be glued to the upright and the two roof slopes (D) then marked out and cut from ½in. wood. One short end of each piece must be chamfered, as shown in the section on the pattern; this is made so the pieces may join at a point of the roof, as shown in the sketch.

Kennel and Dog

Apply a little glue to the edges of the kennel overlay at the top, and also put some glue on one of the long edges of each roof piece. Then press into place, putting in one or two fret pins for strengthening the joint as it is to the end grain the jointing will be made.

The pattern of the dog is simply stuck down to ½in. wood and cut round to outline and the two interior frets afterwards made. Certain parts may be carved away and rounded to make a



realistic looking terrier. The base of the dog is well glued to the base (B) and finally white and black paint will nicely finish it off.

The Lamb

The other book-end, with the lamb, is carried out in a similar manner to that just described for the dog. The uprights (E) are carefully cut also, the patterns being stuck down to the wood or transferred to it by means of carbon paper. When gluing them to the base and upright, space them 1½ins. apart and then glue the lamb centrally between them.

In this case it would be best to colour the lamb before gluing down, or glue the lamb down and finally add the two side uprights. A piece of green baize can be glued to the base of the book-ends to get grip with the polished surface of table or sideboard.

How to build a simple Fixed Focus PHOTOGRAPH ENLARGER

THE ambition of every keen amateur photographer (as against the mere 'press-the-button' merchant), is to own an enlarger. Apart from the satisfaction of having larger prints, one is able to enlarge special parts of a picture, and by lopping off dead wood, so to speak, make a much more satisfactory composition.

But a vertical enlarger costs a good deal of money, and to make one at home demands, in addition to the necessary lens, etc., work of a high standard.

But quite a lot of fun can be obtained, at very little cost in time and materials, with a box enlarger of fixed focus. Obviously it will not give such accurate results as the very expensive professional enlargers but, if well made, will give quite good postcard enlargements from the popular small-size negatives, and this is the largest size that most amateurs will care to undertake at the present cost of photographic paper.

A Suitable Lens

The lens used comes from a watch-maker's eyeglass, of the type illustrated in Fig. 6, and does not cost more than a few shillings normally. Ask for a $5\frac{1}{2}$ glass, which means that it has a focal length of $5\frac{1}{2}$ ins. A lens of any other focus will affect the dimensions given in this article. The mounting (telescopic), is usually of spun metal. The trumpet-shaped piece may be disregarded, and we are left with one piece that contains the actual lens and another short tube-like piece.

The distance between the lens and the negative (see Fig. 1) is thus invariably ($5\frac{1}{2}$ ins.) but that between the lens and

the print (i.e., between frames C and D of Fig. 2) varies. Unless we are going to have an adjustable (sliding) frame and a bellows, we have to decide in advance on what size of film we wish the enlarger to take.

The most popular sizes of film appear to be: Nos. 27, 20 and 18.

For a No. 27 ($1\frac{1}{2}$ ins. by $2\frac{1}{4}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $11\frac{3}{4}$ ins.

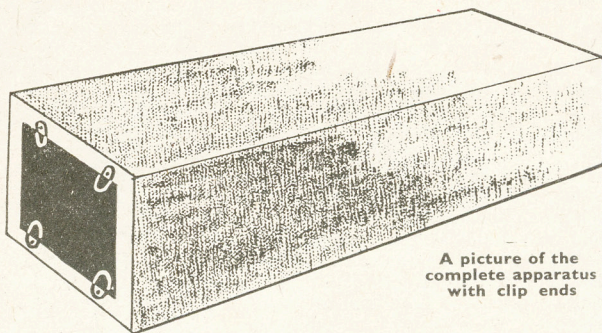
For a No. 20 ($2\frac{1}{4}$ ins. by $3\frac{1}{4}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $8\frac{3}{4}$ ins.

For a No. 18 ($4\frac{1}{4}$ ins. by $3\frac{1}{4}$ ins.) negative, make distance (x) i.e., between the surface of the lens and surface of the post-card equal $6\frac{1}{2}$ ins.

This will enable the distance between frames C and D of Fig. 2, to be calculated and, in turn, the total length of the base board.

Base Details

The base (A) of the enlarger is $6\frac{1}{2}$ ins. wide. It can, for the smallest-size negatives, be cut about 17 ins. to 18 ins. long and any waste trimmed off afterwards. The actual thickness can vary, but $\frac{1}{2}$ in. minimum is recommended. A plank of soft wood can be used, but great care should be taken to see that it



A picture of the complete apparatus with clip ends

is not in winding or warped. A piece of 5-ply would be useful if available.

Three frames (B) (C) and (D) are mounted on this base by screws from below. They all measure, overall, $6\frac{1}{2}$ ins. by $4\frac{1}{2}$ ins., but their arrangement varies.

Frames

The end frame (B) which holds the negative is shown separately in Fig. 4. Stripwood $\frac{3}{8}$ in. thick is used for the main frame, $\frac{3}{8}$ in. wide for the top and bottom and $1\frac{1}{8}$ ins. wide for the sides. A really conscientious craftsman would mitre the corners, as shown, but simpler methods are shown on the main sketch (Fig. 2), i.e., simple butted strips (as at C) or simple lapped halving (as at B).

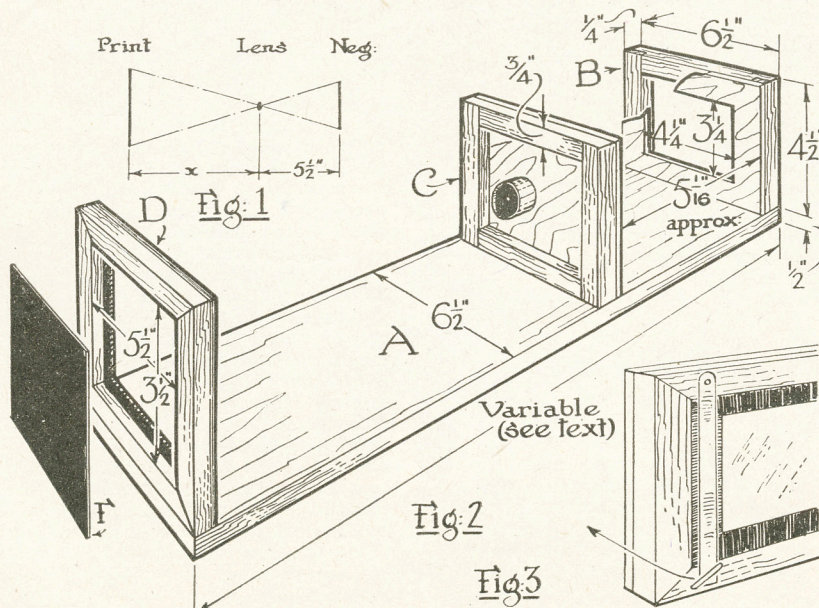
A piece of plywood, $\frac{1}{8}$ in. thick is cut as dimensioned in Fig. 5. When the main frame (B) is glued to it, there will be a $\frac{1}{4}$ in. rebate all round, as clearly seen in Fig. 4. In Fig. 2, a corner of the frame (B) has been cut away to show the construction.

Film and Plate Sizes

The main (rear) opening will be $4\frac{1}{4}$ ins. by $3\frac{1}{4}$ ins. This is regular half plate size, and it may be possible to get two old plates in order to make the negative-holder (E). Just soak the plates in warm water for a while and the emulsion can then be rubbed off easily. Otherwise use picture glass of good quality. Two pieces $4\frac{1}{4}$ ins. by $3\frac{1}{4}$ ins. are required, but ordinary window glass will not do.

For smaller sizes of film than half-plate, paste strips of black paper to one sheet of glass (Fig. 4) so that your negative can be centred on the glass. Another piece of glass is hinged to the first by means of a strip of passe-partout so that the two pieces of glass open book fashion for the insertion of the negative.

When closed, the negative is held stiff and flat. To keep the glass in tightly against the rebate, curved strips of whippy brass are used, as shown in Fig. 3. These are similar to the clips on the back of wooden printing-frames, whence further details can be obtained. Take care that these clips are kept clear of the clear glass opening. Fig. 3 shows a



corner of frame (B) with the negative holder clipped in position.

Negative Holder

The negative holder, however, can be laid aside for a while whilst frame (C) is made. It is possible (perhaps, even best) to use solid wood for this, though a framed construction is shown. This can be $\frac{3}{8}$ in. wide all round and $\frac{1}{4}$ in. thick. It will be best to start off with the plywood piece and then mount the frame on it.

Find the exact centre of the plywood panel by ruling diagonal lines and then make a hole to take the lens and stop. As the wood is too thin to take a brace bit (unless solid wood is used) the hole should be cut with a fretsaw. The lens mounting has to be a tight forced fit, so cut the hole a trifle on the small size and gradually enlarge it with glasspaper. In Fig. 2 we see the tube part of the lens. The lens itself is on the other side, facing part (B).

A Stop Tube

This tube will require a 'stop' to limit the amount of light and to secure better definition. This is a piece of card, opaque, plastic or metal made to fit in the end of the tube (see Fig. 2) and having a clean hole a little over $\frac{1}{8}$ in. punched in it. A fuzzy-edged hole will give poor results.

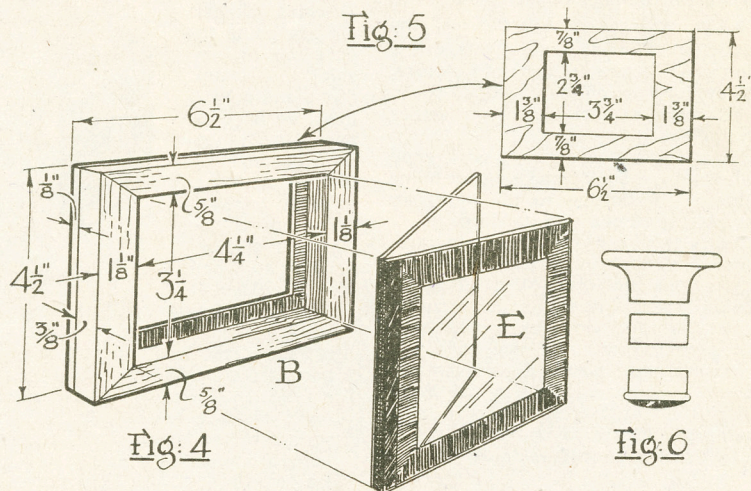
Frame (D) is somewhat similar to frame (B) except that the main opening is $5\frac{1}{2}$ ins. by $3\frac{1}{2}$ ins. (postcard size), so that the opening in the plywood will be 5 ins. by 3 ins., this giving a $\frac{1}{4}$ in. margin all round.

A piece of cardboard (F) is cut so as to go in the rear of frame (D). It is held in place by small turnbuttons (seen in the picture of the completed box on the previous page) or brass clips similar to those shown in Fig. 3 may be used.

The frames may now be mounted on the base (by screws from underneath). It is most necessary to observe that all frames must be square with each other

and to the base. The middle frame (C) is so arranged that the distance from the negative to the face of the lens is $5\frac{1}{2}$ ins. This is not necessarily the distance between the faces of the frames themselves. The distance between the face of the lens and the surface of the postcard has already been given. Here again, it is necessary to point out that this is not necessarily the same as the distance

The greatest care must be taken to ensure that the box is (apart from legitimate light coming via the negative) perfectly light-proof. The smallest pin-hole or cracks between frame (C) and the sides will have unfortunate effects on the print. Thus all joints should have several thicknesses of brown paper glued over them. The enlarger is finally covered with



between the faces of frames (C) and (D). Study Fig. 2 carefully for the arrangement of the frames.

Ply or Card Covering

Preparations can now be made for boxing in the whole lot. This is a very simple job, as all it means is that one piece of, say, $\frac{1}{4}$ in. plywood exactly the same size as the bottom is tacked to the top and then thinner sides fitted of, say, $\frac{1}{8}$ in. ply or even good cardboard. Before the boxing-in is done, however, all internal surfaces must be painted with a dull egg-shell black (a glossy black enamel will not do).

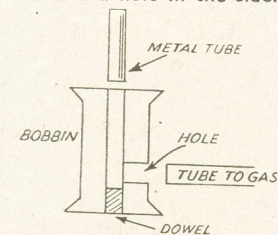
leatherette paper or something similar.

It is a good idea, however, to postpone final nailing down and finish until the enlarger has been tested. It may be necessary to shift, very slightly, the position of the lens frame (C), or vary the marks slightly. Temporary joints can be formed with panel pins, gummed paper, plasticine, etc.

In use, the negative is placed between the glasses (E) (taking care that they are clean) and this is clipped into position. The dull side of the film will be towards the inside of the enlarger. In a dim light or photographic safe light, place a bromide postcard into the end frame, 'business side' inwards, and press home the cover (F), buttoning it down.

A Bunsen Burner

A SIMPLE bunsen can be made in the following way. Find a large bobbin and drill a hole in the side.



shown in the section drawing, and you will have a fine bunsen burner.

Cleaning a File

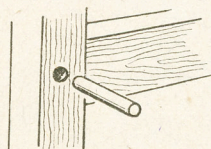
IF you are lacking the usual card file, procure a piece of heavy copper wire. Flatten one end slightly and rub it to and fro along the direction of the teeth. This method will clean a file clogged with sawdust or solder.

Carbon Paper

FOR duplicating paper, melt together 5 parts castor oil and 1 part cerasin, stir in 5 parts drop black (lampblack), remove from fire, add 10 parts petroleum ether. Brush on to thin paper.

Repairing Clothes Horse

IF the joints of a clothes horse show signs of coming apart, drill a hole through each with a $\frac{1}{4}$ in. drill bit, and

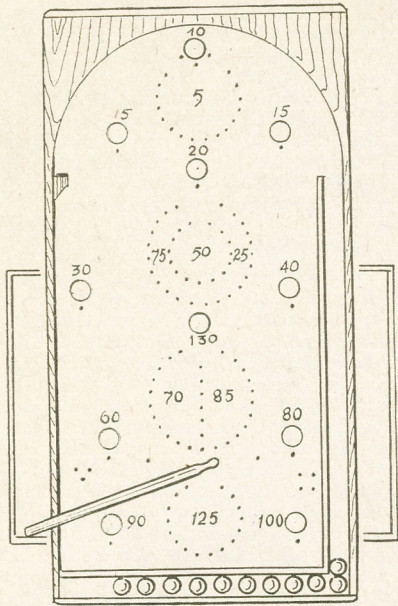


insert a well glued piece of $\frac{1}{4}$ in. dowelling. After the glue has set, clean off the protruding ends of dowel. The joints are now a firm job at just the cost of the dowelling and a tube of liquid glue.

Exposure Times

The length of exposure will depend on several factors such as the intensity of the light (daylight, by the way, is the best and speediest) and the density of the negative, and also on the speed of the paper used. Practical experiment is needed. A good method (and one that saves wasted material) is to cover up, say, two-thirds of the negative and expose the remaining third for, say, 20 seconds. Then expose two-thirds of the negative so that the original third gets an extra 20 seconds, and finally expose the whole negative, so that one strip (the last exposed) has had 20 seconds exposure, the middle one, 40 seconds and the third, 60 seconds. On developing, note which strip gives the best result, and note, too, the quality of light that prevailed. Never point the enlarger directly to the sun. Instructions for developing, etc., are to be found in all the standard manuals and in the free literature issued by photographic manufacturers.

A popular and pleasing game is enjoyed with a PIN BAGATELLE TABLE



THIS is a popular indoor game, simple to make up and well worth the little trouble involved.

The baseboard should be made of plywood, the thickness of the wood should be $\frac{3}{8}$ in. to $\frac{1}{2}$ in. to provide a solid enough bed for the balls and sufficient thickness for the pins to grip in.

The pins are brass ones, 1 in. in length, and can be bought at most hardware shops. The position of these is shown in the general view of the finished board, a plan view being given for that particular purpose. The pins are spaced $\frac{3}{8}$ in. apart, and should be symmetrically placed, guide circles being drawn on a pattern to assist in this.

Baseboard

Make a start with the pattern. This is seen in Fig. 1 and should be drawn out on white paper. The top part is semi-circular and should be trimmed to that with scissors. Strike the 4 circles on a centre line, and put in as pencil dots the position of the pins and cup centres.

Now, from a piece of the plywood, cut out the baseboard to the size of the pattern, and clean up the edges. In the commercially made article the baseboard is provided with a rim, but as bending this round the semi-circular top involves some steaming, and is sometimes a little troublesome, readers can make the baseboard as a rectangle, as shown, and provide a curved run for the balls in the following simpler way.

Cut a piece of $\frac{3}{8}$ in. thick board to the size given in Fig. 2. The grain of this should run in the direction shown, so two or more pieces of the board will have to be glued together to make up the width. Run a line along the bottom,

$\frac{1}{4}$ in. up, and in the centre of this strike the semi-circle shown. Cut out, then glue to the plywood at the top, allowing $\frac{3}{8}$ in. each side to overhang.

The sawn curved inside edge, by the way, should be glasspapered to smoothness. Cut two strips of wood, $\frac{3}{8}$ in. thick, $\frac{3}{8}$ in. wide and $8\frac{1}{2}$ ins. long, and glue these to the edges of the plywood, each side, to bring the edges of the baseboard level with the glued-on piece. Make a close fit here, then the joint will scarcely be perceptible, after finishing.

Rim Pieces

Two rim pieces for covering the remainder of the sides will be required, $1\frac{1}{4}$ ins. wide. These extend from the bottom of the baseboard to the glued-on top piece. A similar strip is glued across the bottom, to complete rimming in the whole board. The corner edges of this are neatly rounded off, as in detail (B) in Fig. 3.

Cut another rim piece for the top edge, this being $1\frac{1}{4}$ ins. wide, so that it will extend below the board $\frac{1}{8}$ in. and give it just the necessary tilt to send the balls rolling briskly down the table. Trim off the bottom corners of this piece, as at (C).

Now take the paper pattern, pin it to the table, and with an awl prick holes as a guide for the pins and cups. Remove the paper then with a $\frac{3}{8}$ in. centre bit, bore the cup holes just $\frac{1}{8}$ in. deep. It will be found that a few turns of the brace will cut the wood deep enough, then the waste can be removed with a chisel and leave a flat recess.

Finish to Woodwork

At this stage any finishing of the woodwork can conveniently be carried out. The cup holes look better if stained black. The bed of the table can be just varnished or waxed. The rim portions look more effective if stained oak colour before varnishing.

At point (A) on the board, a tempered steel pin can be driven in, failing the pin, a block of wood, $\frac{3}{8}$ in. wide and $1\frac{1}{4}$ ins. long, shaped as at (D) in Fig. 4, can be substituted. This is glued in position, and has a piece of thickish rubber glued to its upper end to act as a spring, pitching the ball forward for its run down the board.

An alley way is provided by nailing a strip of wood $\frac{3}{8}$ in. wide, and $\frac{1}{4}$ in. thick and spaced $\frac{3}{8}$ in. from the side. This starts at $\frac{3}{8}$ in. from the bottom, and

finishes just below the commencement of the upper curve.

A second strip of similar wood joins this, and is nailed across the board, providing a space for the balls before they are brought into use. These strips, like the board, can be left plain, and be varnished or stained as preferred, to match the rim pieces.

WOOD REQUIRED

Plywood—2ft. 6ins. long and 1ft. 3ins. wide
Rim pieces (2)— $\frac{3}{8}$ in. by $1\frac{1}{4}$ ins. by 1ft. 10 $\frac{1}{2}$ ins.
Rim pieces (1)— $\frac{3}{8}$ in. by $1\frac{1}{4}$ ins. by 1ft. 3 $\frac{1}{2}$ ins.
Rim pieces (1)— $\frac{3}{8}$ in. by $1\frac{1}{4}$ ins. by 1ft. 3 $\frac{1}{2}$ ins.
Alley way, etc.— $\frac{1}{4}$ in. by $\frac{3}{8}$ in. by 3ft. run
Curved top piece— $\frac{3}{8}$ in. board, approximately 1ft. 6ins.

The pins can now be driven in their respective positions. Drive them in firmly, and see sufficient room is allowed for the balls to enter the circles. It will be noticed that the pins are used, right and left, near the bottom, to form an angular and square box, as it were. When the balls enter these, all balls on the board which have failed to score can be used again. The numbers against the cups and circles, can now be put in with paint and fine brush.

For the game 12 steel balls will be needed, $\frac{3}{8}$ in. diameter, and a cue. The latter is sketched at (E) in Fig. 4, and can be easily shaped up from a length of $\frac{1}{2}$ in. round wooden rod.

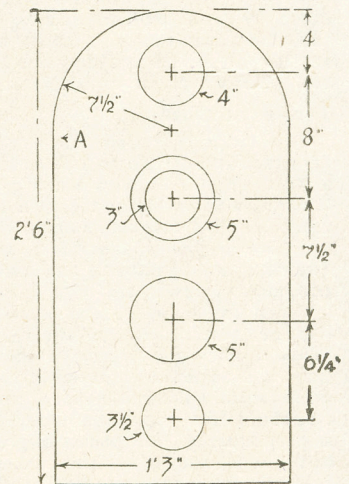


Fig. 1—Plan of board with pin circles

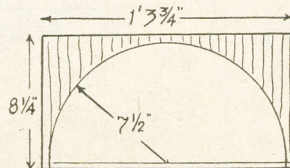


Fig. 2—For a rectangular top

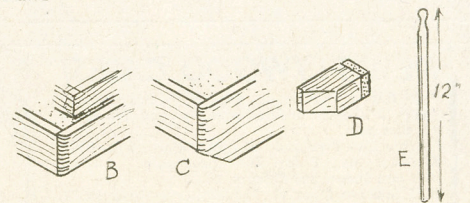


Fig. 3—Corner joints

Fig. 4—Tip and cue

Amateur angling should include BREAM FISHING

BREAM provide many anglers with much enjoyment. Not every river contains these fish, for they prefer slow-flowing waters, canals, sluggish waterways, ponds, meres, lakes, and ancient moats. Perhaps their choicest haunts are in those beautiful sheets of water known as the Norfolk Broads. The drains of Lincolnshire and the Fenlands generally are to their liking, and thereabouts they thrive wonderfully, roving up and down the reed-fringed water-courses in huge shoals.

How to Identify

The bream is easily identified by its great depth of body, its long and markedly-forked tail, its blue or dusky fins, large scales and bronze colour. In the words of Izaak Walton, the bream is a 'stately fish'. Bream attain good size; one of 12lb. 12oz. was caught at Startops End Reservoir, Tring, in 1931. Before that event, the biggest English bream seems to have been one of 11lb. 3½oz. from the Ordnance Pool, Enfield. Another Tring fish weighed 11lb. 2oz. and was caught in 1930. The Thames has yielded bream of 10lb. 13½oz., and 9lb. 14½oz., in addition to many fish ranging from 5lb. to 8lb.

In addition to the Thames, the Broads, and the Great Ouse, there are many fine bream waters, as the River Axe, in Somerset, and the Lincolnshire Witham and the Glen.

For sport these fish are all right, especially if you drop across a big lot at their breakfast time. In these bigger shoals the fish run an average of 2lb. to 3lb. An occasional larger fish is met with.

Tackle and Outfit

The tackle required consists of a light cane rod of 12ft. to 14ft. in length, a Nottingham reel, with a fine dressed line, just a trifle thicker than is used for roaching, a 2yd. cast of fine undrawn gut, and 'crystal' hooks, Nos. 8, 9, or 10. The float may be either a medium-sized porcupine or a swan-quill.

When fishing very deep water you will do better with a 'slider' float. When angling for bream in the daytime, it is advisable to have but two or three small split-shot nipped on the cast about 18in. above the hook. Some anglers squeeze small pellets of ground-bait round the shot; this flakes off gradually, leaving the cast free, and helps to attract the fish.

Ground-Bait

Popular ground-baits for bream include bread and bran, soaked and well kneaded together, brewer's grains, worms, maggots, greaves ground-up, potatoes, etc., etc. Some old regular bream-fishers believe in baiting up for several days before fishing a 'swim', throwing in huge quantities of ground-bait.

However, you need not go to all that trouble. You need but to carry a small bag of soaked bread and bran (stale bread will do), and a tin of red worms or brandlings. Setting out for the 'swim' where you desire to try your luck you should keep an eye open for signs of bream—muddied patches of water tell the tale of roving bream.

They have a habit of roaming to and fro—here today and gone tomorrow, as it were. We have known them in abundance one day, but a few days later that same shoal might be a mile or two downstream or upstream in another deep spot. As they travel they root on the bottom for food. We have seen whole stretches of Lincolnshire waters milky in colour because of the travelling bream, churning up the mud.

Suitable Positions

Given such a clue, the angler should make the most of it, selecting such a spot and throwing in his ground-bait to keep the shoal working around thereabouts. The float should be adjusted so the baited hook just drags the bed of the stream.

Bream are sensitive, and you need to set about your task quietly—and keep quiet all the time. No jumping around on the bank. On waters like the Broads, where bream are often in shallow parts, it is needful to cast a long line from a moored boat to where the fish are feeding. The shallow, clear water, beloved of bream inhabiting Broads and meres, makes casting from a distance imperative.

There is much fascination in watching the float when breaming. Sometimes, when a fish bites it will be dragged under immediately. At other times the quill will be noticed to rise in the water and lie flat on the surface, and if you wait a little while it will sink under. This happens when a fish rises with the bait in its mouth.

The Time to Strike

Bream have a way of blowing out the

baited hook if they feel the slightest resistance of the line. When the float slides under in a kind of sidelong movement—strike! Bream will frequently suck off the bait—especially wasp-grub—so quietly that you cannot discern it until too late—when you do strike you miss the fish! Some anglers advocate a worm threaded on a three-hook tackle when bream behave in that manner.

Sporty Play

Big bream give capital sport. They are hefty, pull hard, nose-dive for the muddy bottom, or plunge around, tugging strongly the while. But play the fish carefully and he will yield up the gage of battle. Be sure and take a long-handled landing-net with you, for you may have to fish from the top of a steep bank. It is hard luck having to lift a wallop into the air before you can get him on the bank—and to lose him in the process. Have a net that will reach well down.

Once you have located a feeding shoal, ground-bait judiciously—little and often whilst you are actually fishing—to keep them there. If the shoal moves on, follow. If the water is clear, take cover behind reeds, etc. Fish the bait on the bottom. Let your tackle be reasonably fine.

Best methods to adopt include 'stret-pegging' or 'laying-on' and ledgering. The bait must be well on the bottom. Best baits include red worms, brandlings, dew worms, tail-end of lobbs, wasp grubs (in summer), caddis grubs, pastes, boiled wheat, white greaves. Red worms, lively and well scoured by keeping them in clean moss for a few days, are as good a bait as any. September and October are good months for bream-fishing, provided the weather is favourable.

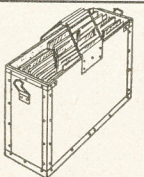
Types Caught

The common bream (*Abramis brama*) is most numerous in our rivers and still waters, but there is a smaller species known as the silver bream (*Blicca bjoernka*) often alluded to as 'tin-plates' or 'flats' that average around 1lb. to 1½lb., though specimens up to 2lb. or so have been recorded.

Like the common variety they feed on the bottom or near it, and swim in shoals. Baits and methods for these bream-flats are similar to those employed for catching the common species; silver bream are not very sport-giving, but at times they may be had in quantity.

NEW PLYWOOD CASES!

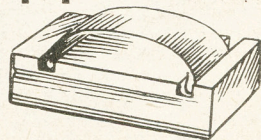
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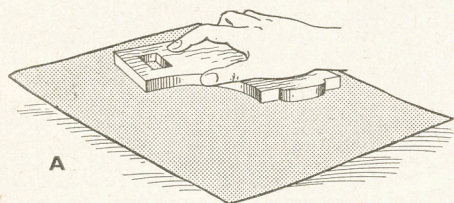
MORE and more people, particularly craftsmen, are realising the value of the fretsaw frame and the complementary tools which go with it, and the wider sphere of use to which all these can be put. Whereas originally, of course, it was intended for use in fretwork, it has now extended its value for almost all kinds of light woodwork.

In consequence, the variety of suggestions in these pages has increased, but in most of them the use of the fretsaw will be an important tool which accounts probably for the fact that more and more of these fretwork frames and fretmachines are being sold, and their usefulness is being appreciated not only for producing articles of decoration, but in practical light woodwork about the home.

Saw Points

There are now obtainable, a whole range of saws for a variety of work. These vary from the very fine multi-toothed blade to the heavy $\frac{3}{16}$ in. wide saw so essential to solid work such as toy making.

The beginner who has the use of the fretsaw frame is apt to forget this range of blades which he can use, and in consequence undertakes work unsuitable and causes himself endless worry and labour. Obviously, if you are cutting thin wood and want a very fine line as in jigsaw puzzle cutting, then you should have a fine sawblade. This is of the grade known as 00.



From there, the grade progresses up to No. 6 which is a coarse one used for more or less rough work of outlines or light woodwork. Apart from that, there is the wide-faced blade nearly $\frac{3}{16}$ in. across from back to front, with proportionately coarser teeth. This is just the blade for cutting thick wood such as used in toy making or the odds and ends of useful work about the house. By using the proper blade you save yourself a lot of trouble.

One point which generally arises with some beginners is that they forget that the cutting is done on the down stroke. The teeth of the blade, therefore, must point downwards. This direction can be seen, but the easiest plan is to run a finger and thumb along the edge of the blade (see Fig. 1) and you can soon tell. Do not, of course, grip the blade tightly

or you may tear your skin, but by lightly running the thumb along you can tell quite easily that the teeth point downwards in one direction.

Another point which may be of interest and assistance is in cleaning—glasspapering the work either as you go along, or when completed. This is apt to be a procedure largely overlooked and

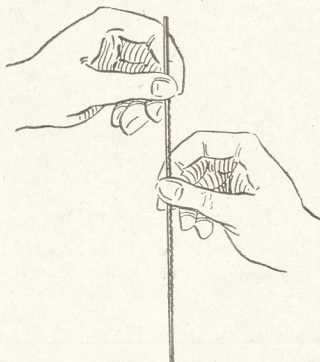


Fig. 1—Testing direction of saw teeth

hurried. Actually, of course, it should be the finishing touches to produce a clean smooth and shapely piece of work.

In undertaking small parts, their cleaning is sometimes difficult, and here are two suggestions which may help you out. Both are illustrated at Fig. 2 and almost explain themselves. Instead of using the glasspaper on the work in the ordinary way, reverse the process and rub the work on the glasspaper.

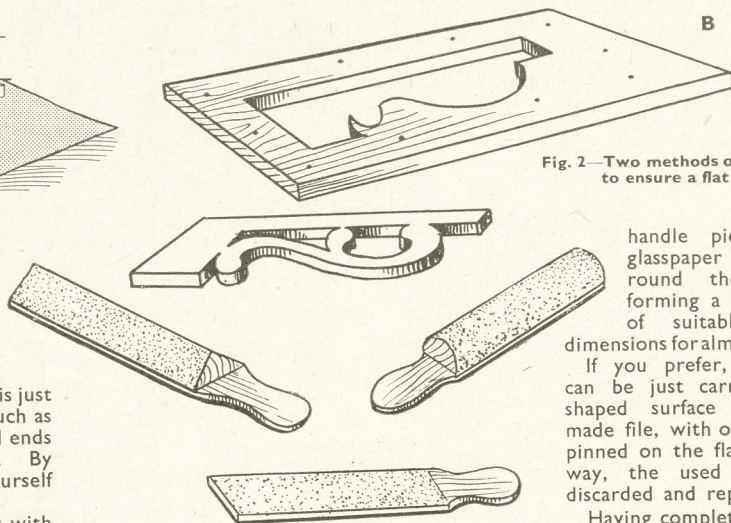


Fig. 3—Handy small glasspaper holders can be made like this

A sheet can be laid flat as (A) Fig. 2, or lightly pinned to the bench with drawing pins, if it is likely to cockle. Then the small piece being cleaned is laid on the glasspaper, and with a circular motion is

rubbed round until the finished surface required is obtained.

Flat cleaning surfaces

At (B) Fig. 2 you have the suggestion for a similar piece of work. This, as you see, is cut from the piece of wood to leave a solid framework, thus for cleaning the little piece of fretted work can be replaced in its original board and thus leave the whole flat surface suitable and simple for cleaning with glasspaper. The board can be pinned to the table for fixing if you wish.

This procedure is particularly useful in preventing those slightly rounded edges which is an unfortunate result obtained by some workers. It is not the easiest thing to keep glasspaper flat on a small piece of work, and in consequence very often the edges of the wood are slightly thinner than the rest. Wherever possible, of course, you should use the glasspaper on a hand block, or better still, on one of the special spring-handled glasspaper blocks which Hobbies Ltd. supply.

Shaped Aids

If you are doing a lot of small work in models, then large pieces of glasspaper are often awkward and unsuitable. At Fig. 3 you have the suggestion for simple little cleaners which can be easily made, and which prove ideal for a number of awkward corners or parts which cannot otherwise be reached in the ordinary way. Small pieces of wood are shaped as shown, and glued to a

handle piece, then the glasspaper can be glued round these parts, so forming a home-made file of suitable shape and dimensions for almost all occasions.

If you prefer, the glasspaper can be just carried round the shaped surface of the home-made file, with overlapped edges pinned on the flat back. In this way, the used paper can be discarded and replaced with new.

Having completed a satisfactory model, there is no better way of showing it off than by having it fixed upon a suitable base. Those you see on display in exhibitions are finished in this way with a fairly thick board and have a base nicely finished in a dark colour, usually black, with shaped rounded edges for neatness.

Baseboard Hints

Remember that this baseboard should always be fairly heavy to provide an apparently solid foundation upon which the model is resting.

If you have, say, a ship apparently at sea, then the imitation waves are on the upper board and a thicker and larger board fitted beneath to form the actual base itself. If you have a locomotive model, then the sleepers are fitted to a secondary base before that in turn is finally put down to a larger one. The lowest base should be polished black and not in bright colours so it will detract from the actual model itself.

If, too, you are adding any display card showing the name of the model, it should be quite a neat small one fitted to this base either against a piece of triangular wood, or resting against the model itself. Do not spoil the whole thing either by having the title or particulars of the model just simply in pencil or even in ordinary ink. You probably know some friend who could print the wording nicely for you on, say, the back of a visiting card, to add to the completely attractive result.

The base can be left with its edges

straight if you wish, but a much nicer effect is produced by rounding the upper edge slightly to give a beaded effect. You

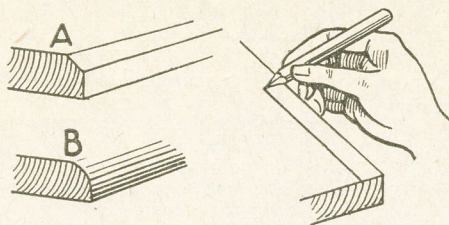


Fig. 4—Pencil mark the edge before shaping

see the result shown in (B) at Fig. 4.

The Shaped Edge

This nicely curved edge not only adds to the attractiveness but also apparently reduces the thickness of the wood which might otherwise look clumsy and heavy. You can get this nicely rounded edge by first taking off shavings with a small plane, and finishing with glasspaper. A similar effect is also obtained with the use of the fairly coarse file, but in such cases, be careful not to let it bite too far into the wood so that scratches show

after final cleaning. In thin wood with small beaded edge you can, of course, get the effect with first a coarse grade of glasspaper, and then a smooth one.

A good plan—indeed, it is essential to get the right finish—is to mark your pencil line along the surface of the wood (see Fig. 4) to show the extent of your curve when the rounded portion is finished. The pencil point is drawn along with the finger pressed close to the edge, thus maintaining a straight line—providing the actual edge itself is straight. Then you can plane down some of the unwanted wood until you get a slope or chamfered edge, as you see at (A) Fig. 2.

From there, you take off the two angles provided, gradually rounding it until you have finished a perfectly smooth curve such as shown at (B). Keep an even pressure with the glasspaper, and work the length of the wood rather than across it. Finish up with a very fine grade and clean away any fine dust with a clean rag. The wood is then ready for whatever finish you are putting upon it.

A simple apparatus which will make an efficient AQUARIUM SYPHON

If you possess an aquarium you will probably realise the need for some method of aerating the water. Fish, insects and plants living in the water cannot live without air. Water contains dissolved air which the creatures breathe, but an aquarium with only a small surface area can soon become exhausted of air unless the water is frequently changed or aerated.

The apparatus described here is by no means original, but it is so useful that we feel it should become more widely known and used.

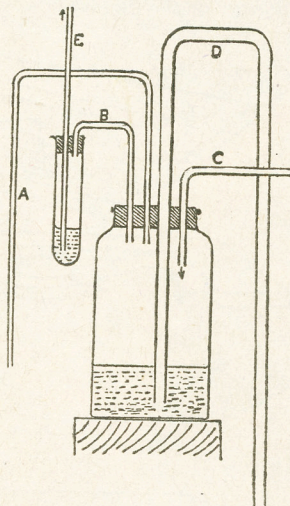
Besides being useful for the aquarium, it can be made just for the purpose of watching its action. Children and grown ups spend literally hours looking at it, and wondering how it works.

The Large Jar

The sketch shows the layout. The centre of the whole apparatus is a large jar, such as a fruit jar. This should have a tightly fitting stopper of cork or rubber. In the stopper you should bore four holes, one for each of the tubes shown. Use a piece of red-hot wire to bore the holes.

The tubes should be made of glass, but you can probably improvise with rubber tubing, if you are careful to avoid kinking. The actual entrance through the stopper must be made of glass (or metal) tubing. Pipe (D) should have a larger diameter than the others.

You can obtain glass tubing from suppliers of chemistry materials (addresses on request), and you can bend it



by heating it gently in a gas flame to a red heat.

An Air Valve

Pipe (B) leads to a test tube, a substitute for which could be a small bottle with a fairly wide mouth. This test tube acts as an air valve. It should contain about 1 in. of water, so the bottom of the

lower glass tube is well covered. Tube (E) must be about 2 ft. long.

It works like this. Water flows from the tap through pipe (C) into the air-filled jar. The air which the water displaces bubbles through pipe (A), aerating the water of the aquarium. Gradually the jar fills with water, until there is no more air left to displace.

The Syphon Action

Since the water is still entering the jar from the tap, this rises in pipe (D) until it overflows down the longer arm. Once the water starts to flow down this pipe, a syphon action takes place, and the jar is emptied of water by this means, air being drawn down pipes (E) and (B) to take the place of the water.

When the jar has been emptied, the syphon action naturally ceases, and the process of filling up the jar with water begins again. And so it goes on, hour after hour. The action is fascinating to watch.

Make sure that the water from the tap enters neither too slowly nor too quickly—a little experimenting will show you the best setting. Another point to watch is that you have the lower end of tube (D) about 6 ins. lower than its fellow, or you will not get a good syphon action.

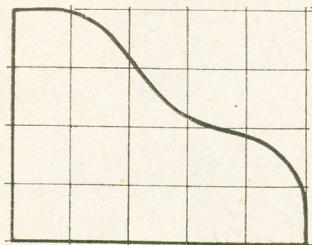
If the stoppers do not fit correctly, or the holes for the tubes are too large, seal them with candle wax, so no air leakages occur.

A handy Continental type of household tidy is this TALL FLOOR DUSTPAN

It is said that woman's work is never done, but with this dustpan, easily made in an evening, a good deal of stooping is obviated. Such a contrivance is extensively used in many parts of the Continent, where it is employed in conjunction with a straw broom. However, an English-type broom will serve quite well. The rubbish on the floor is just swept into the wooden dustpan without having to stoop down to hold the usual English-pattern dustpan.

Suggested Sizes

The size and dimensions need not be too rigidly fixed. Naturally, the bigger the box, the more rubbish it holds, but,



2" Squares



The side is squares and a simple decoration at the same time, the heavier it will be to carry about—a disadvantage that would cancel out its other advantages. A too fragile model, however, would not stand up to hard use and would probably be top heavy. The model should stand upright on the floor by itself.

Sides and Base

Merely as a suggestion we show a side 10ins. long and 8ins. deep, to be cut in $\frac{3}{8}$ in. plywood. Two sides are, of course,

required, and may be cut together if a fretmachine is available. Otherwise one may be cut, the other traced off from it and then the two clamped together for glasspapering.

The bottom should be about 8ins. to 9ins. wide (according to the width of plank available) and, of course, 10ins. long. It should be about $\frac{1}{2}$ in. thick so the fore edge can be bevelled down towards the open end of the box, to allow rubbish to be swept in.

Suitable Wood

A hardwood such as oak is best for this part, as it will better stand up to wear. Many readers will probably be able to fit a metal plate bottom and this is certainly an advantage if stiff enough.

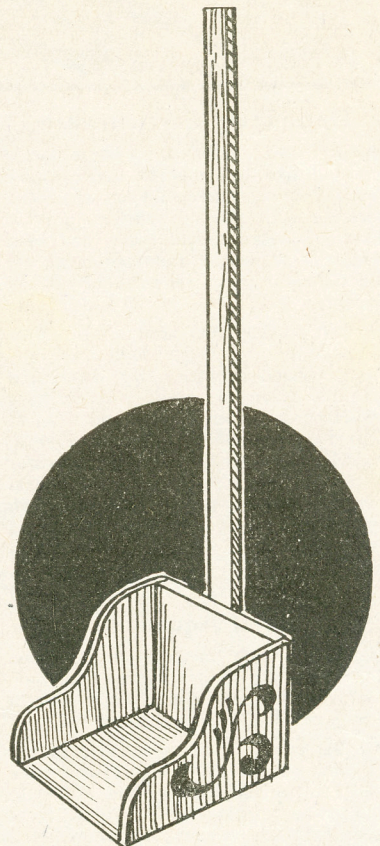
The back is easily fitted, and should be about $\frac{1}{2}$ in. thick and securely fixed so that the handle, in turn, can be firmly fixed. This handle is 4ft. or so long, and can be somewhere about 1 in. by $\frac{1}{2}$ in. section or a little wider. Screw it on firmly, the handle extending, at the back, right down to the bottom of the box.

In the diagram, the handle is shown rectangular throughout, but towards the top it may be rounded off (with rasp, glasspaper, etc.). A great thing is to avoid anything that will splinter.

Decoration if Desired

In an article of this kind, no decoration is really necessary, but since the very dawn of civilisation, Man has decorated his tools and appliances. In parts of the Continent today, too, many things are decorated with simple 'peasant art' decoration. Especially if this dustpan is intended as a present, decoration in moderation has a powerful psychological attraction.

The whole job, after glasspapering, can be given one or two coats of pale green paint and a simple peasant-art motif, as illustrated (or any other design to your choice) painted on. The most important thing about peasant art is that the motifs are drawn boldly with



simple brush-strokes: no careful outlines and then filling in. The decoration could be done in a darker green or in yellow.

When this is dry, a coat of hard spar varnish will give a 'super' effect besides serving the very utilitarian purpose of protecting the job. Or as an alternative you can even put on a smaller fretwork overlay part taken from one of our design sheets.

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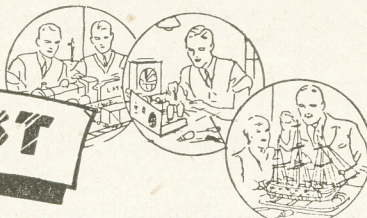
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REPLIES OF INTEREST



A selection from replies to readers' letters which we receive on a variety of subjects relating to Hobbies generally.

Decorating Earthenware

I HAVE two glazed earthenware jars I would like to adapt to use as table lamps, but would like to paint same and decorate with flower transfers. What paint or enamel should I use, and what treatment is needed to make it adhere successfully to the glazed surface? (D.S.—Denton).

ANY good quality artists' oil paints will normally go well on any clean, glazed surface, and if treated carefully transfers will also adhere satisfactorily, though in some cases thin shellac or similar colourless varnish may be used to dampen the transfer instead of water. To preserve, a final complete coating, applied after thorough drying, of megilp or other colourless varnish is usual.

Metal Aquarium

I HAVE a bare metal waterproof box which I wish to turn into an aquarium. Could you please tell me how to prevent it from rusting? (N.T.—Newcastle).

YOU could paint the outside of the tank with any kind of anti-corrosive paint, to prevent rusting, but we would not advise painting the inside at all, as most lacquers, paints, bitumen, etc., contain acids and other matter that would doubtless be harmful to fish life. But why not make or buy a proper aquarium? It would be more satisfactory.

Aquarium Fish Breeding

CAN you let me know how tiny fish newly hatched in an aquarium should be fed? F.C. (Slough).

THEIR natural food—for which there is no good substitute—is microscopic water-life called animalcula. As these minute, single-cell creatures are impossible to catch, except by taking quantities of pond water—a troublesome action—they are best bred artificially. Fortunately this is easy to do. Glass jars are filled with water, wisps of straw or hay is put into them and they are stood in the sun. After about two weeks—less if conditions are good, a slight fermentation will have taken place and the water will be swarming with animalcula—which, however, you will only be able to see under a microscope. A few spoonfuls of this, added to the aquarium water daily, will feed those of the fish family which you have selected as worth trying to rear until they are large enough to attempt maturer foods.

A Cold Box

WITH the warmer weather, I have been trying to find out from my more technical friends, the design and structure of a 'cold box'. Can you help, please? (G.B.G.—Widnes).

YOU can make a good cold box without the slabs, which may be hard to get. Make a double box, and fill the space between with cork dust. Provide two zinc trays for the box, one at the bottom and one resting on battens at the top. Lay a strip of soft butter muslin in top tray, and let the ends hang down the sides of the box into the bottom tray. Two slatted shelves for food should be fitted in between, and a close fitting door provided like that on a safe. Keep the top tray fitted with crushed ice or cold water to lower the inside temperature.

Frosting Glass

WOULD you please furnish me with details for a simple home method of frosting glass? (F.A.C.—London, E.3).

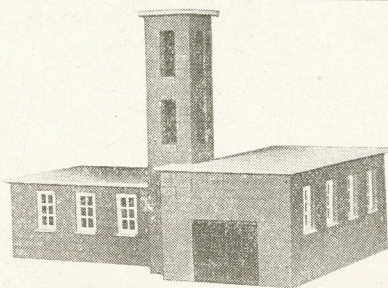
GLASS is frosted commercially by various processes, including sand blasting—that is, blowing a stream or jet of fine cutting sand over the glass. To frost a job such as you describe, by hand, all you need is a supply of medium grade carborundum powder, and some flour emery. First cover the part of the glass that is to remain clear, by pasting on it a piece of stout paper. Next take some of the carborundum powder and mix it to a paste with water, and use a leather or linen pad to rub it over the glass. Use a rapid and fairly heavy circular stroke, working gradually over the whole area. Wash off and inspect, even up any clear patches, then 'fine' the job by using the flour emery. The job is easily done, but there is a knack in getting an even colour, so make a few trials on an odd piece of glass first.

Electricity and Concrete

MY workshop has concrete walls and floor, and I would like to know if it would be safe to install an electric fire in it. Some friends say it makes no difference, and others say it does. (B.O.—Dalkey).

CONCRETE, especially when damp, is a fairly good conductor of electricity. If it was reinforced by wire netting or metal bars during erection, its insulating properties will be almost zero. Because of this, a person touching any bare leads, bare switches, or other units connected to the mains, may receive shocks when standing on such a floor. This means that particular care should be used in installing any fire or

other apparatus. All leads should be of good rubber-covered cable; switches should be the type with insulated covers, and any metalwork (e.g., frame of the fire) should be soundly earthed to the proper earth socket provided (large plug on mains power point). If no earth is available on the power supply plug, then it is advised the fire be fixed where metal parts will not be touched, and the mains plug should be withdrawn before the fire is handled.



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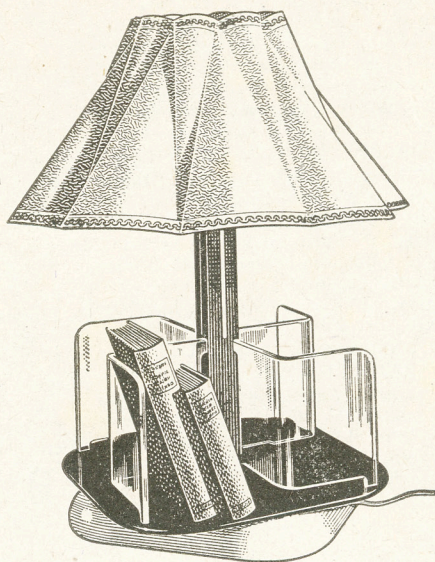
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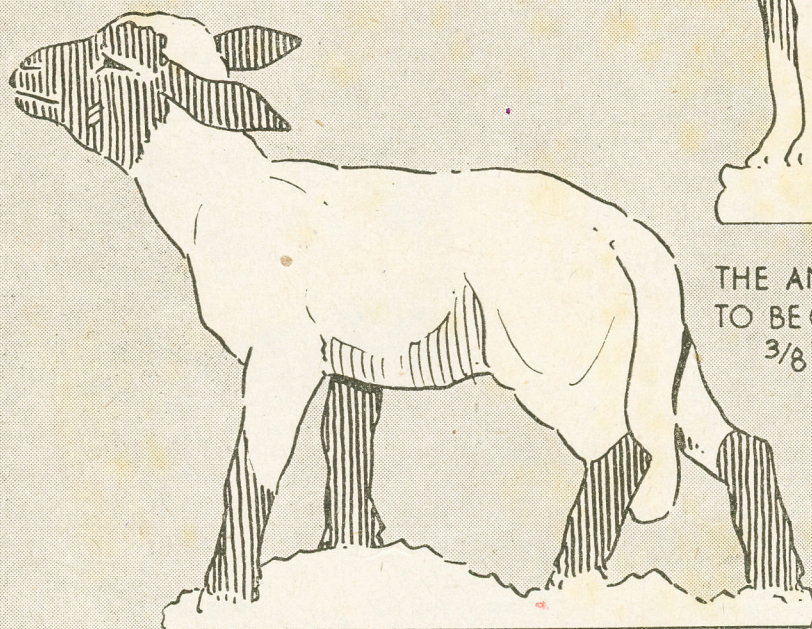
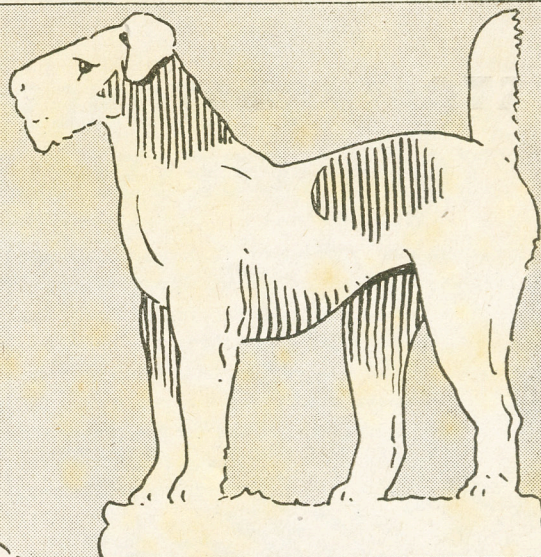
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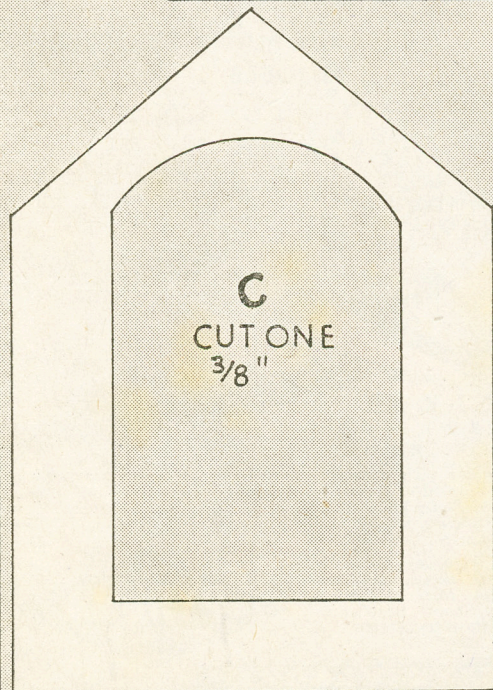
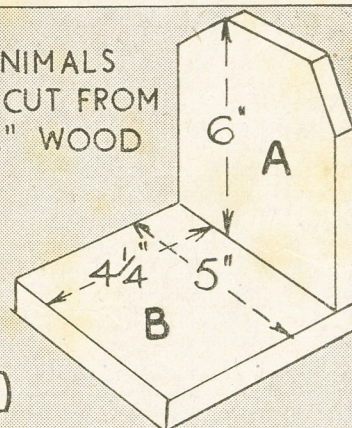
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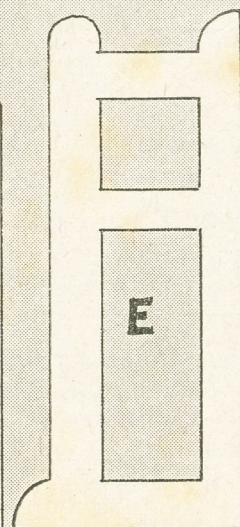
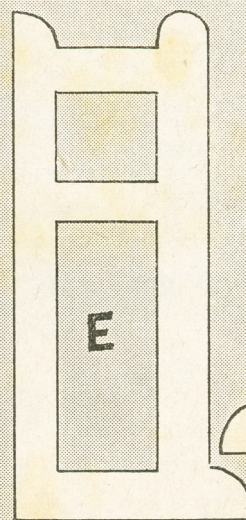
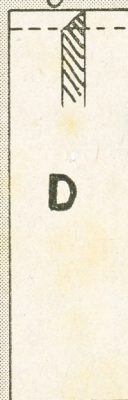
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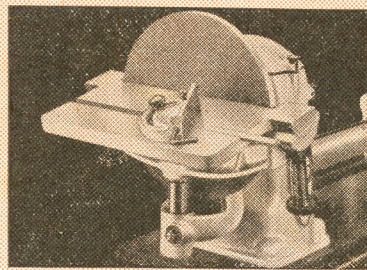
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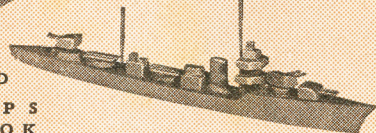
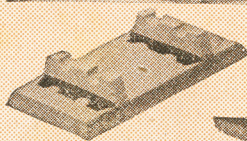
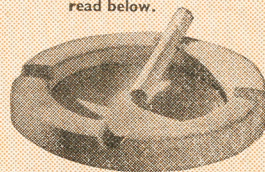
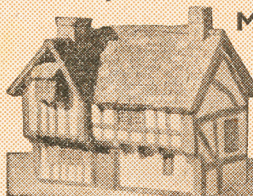


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